REMARKS

In response to the Office Action dated April 3, 2007, Applicants respectfully request reconsideration and withdrawal of the objections and rejections of the claims.

The Office Action alleges that the Declaration is defective, as not identifying the mailing address of each inventor. The Office Action notes that the mailing address is an address at which an inventor customarily receives his or her mail. The Office Action appears to be requiring that the mailing address include a zip code.

Applicants would like to point out that the addresses identified in the Declaration are the full addresses at which the inventors receive their mail. Hong Kong does not employ zip codes. It is comprised of a number of districts, one of which is Hung Hom, identified in the Declaration. Withdrawal of the objection to the Declaration is respectfully requested.

In response to the objection to claim 25, the claim has been amended as suggested by the Examiner.

Claims 1, 8 and 13 were rejected under 35 U.S.C. §101. The Office Action alleges that these claims are directed towards a mathematical computation, with no final, usable, result produced. Applicants respectfully traverse this assertion.

The pending claims are not directed to a mathematical computation, per se. Rather, they recite a real-world application, namely the transmission and/or reception of digital messages. For example, claim 1 recites that the digital message comprises N digits each having any one of M values *k*. Among other steps, the claim recites that each of the M values is transmitted within a bit period. The claim recites the further steps of receiving a chaotic signal, and demodulating the chaotic signal to

generate the transmitted value. These are real-world applications of technology. The claim does not recite mathematical computations, as such. Rather, it recites a practical application of the use of chaotic signals.

It is respectfully submitted that the subject matter recited in the claims falls within the realm of patentable subject matter under 35 U.S.C. §101. Withdrawal of the rejection is respectfully requested.

Claims 1-34 were rejected under the second paragraph of 35 U.S.C. §112. The Office Action questions how one would ensure that a receiver stores values of all chaotic signal generators. In response thereto, claims 1, 13, 18 and 30 have been amended to recite that the values of all chaotic signal generators that are used to transmit the message are stored at a receiver. In other words, Applicants are not claiming that a receiver stores the chaotic characteristic values for the entire universe of chaotic signal generators. Rather, the receiver stores the chaotic characteristic values for those chaotic generators that are used at the transmitter, to generate and transmit messages.

The Office Action states that the term "bit period" is not understood. It is respectfully submitted that this term is understood by a person of skill in the art to be indicative of the time that it takes to transmit one bit of data. Attached to this response is a copy of a web page showing the results of an Internet search for the term "bit period". As can be seen, the first two results each comprise a definition of the term "bit period", namely "the amount of time required to transmit a logical one or a logical zero."

It is respectfully submitted that the term "bit period" is employed in the claims in a manner which is consistent with the commonly understood meaning of that term. Withdrawal of the rejection is respectfully requested.

The Office Action states that the claimed limitations recited in claims 1, 8 and 13 do not correspond to the preambles of these claims. Claim 1 recites a method for transmitting and receiving a digital message. The body of the claim recites that the value of a digit in the digital message is "transmitted within a bit period". The final step of the claim comprises "receiving the chaotic signal at a receiver..." It is respectfully submitted that the recitations in the claim conform with the preamble of the claim.

The preambles of claims 8 and 13 have been amended to conform to the subject matter recited in the bodies of these claims. Withdrawal of the rejection is respectfully requested.

Claims 1, 8, 9, 11, 13, 16, 18, 23, 25, 26, 30 and 33 were rejected under 35 U.S.C. §103, on the basis of the *Cong et al.* publication, "Chaotic Frequency Hopping Sequences". The *Cong* publication discloses a method to generate frequency hopping sequences, including a mechanism to generate a chaotic sequence. In this method, a random number is introduced into the chaotic algorithm to generate a first chaotic number. The chaotic number thus generated is then introduced into the chaotic algorithm to create further chaotic numbers, in an iterative process. This method creates an indefinite chaotic sequence.

As stated in the introduction of the *Cong et al.* publication, the disclosed method uses a direct-sequence system. This is a well-known coherent method which requires the same chaotic sequences to be reproduced at the receiver as

used in the transmitter. Traditionally, when frequency hopping sequences are used to transmit information, the same chaotic (frequency hopping) sequences need to be regenerated at the receiver, to effect transmission.

In contrast to the reference, the pending claims recite that a chaotic sequence is generated for one bit period. As a result, there is a non-coherent relationship between the transmitter and the receiver. Consequently, there is no requirement to reproduce any chaotic sequence in the receiver. Only the characteristic values need to be coherent between the receiver and the transmitter. It is respectfully submitted that the *Cong* publication does not contemplate, or suggest, non-coherency between the transmitter and the receiver.

To further explain, the first paragraph of section III in the *Cong* publication states that during the hardware implementation, "a small random perturbation of either the system variable or the system parameter" has to be used "to destroy the unstable periodic orbits in chaotic region". This means that, in the practical hardware implementation of the *Cong* disclosure, Equation (8) is changed such that it is no longer a chaotic system, because of the extra small random perturbation.

This can be contrasted to the presently claimed subject matter, which does not require a small random perturbation in the generation of the chaotic signal. Rather, the claimed subject matter uses a chaotic system to generate the chaotic signal at all times. The characteristic values of all of the M chaotic signal generators used at the transmitter are common to both the transmitter and the receiver.

It is respectfully submitted that the *Cong* publication is completely silent as to any modification of the traditional frequency hopping communication system to arrive at a non-coherent chaotic system, such as that recited in the pending claims. It is

respectfully submitted that the subject matter of the claims is neither disclosed, nor otherwise suggested, by the *Cong* publication.

Reconsideration and withdrawal of the rejection, and allowance of all pending claims is respectfully requested.

Respectfully submitted,

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Web Results **1** - **10** of about **72,000,000** for **bit period**. (**0.26** seconds)

Definition: **bit period**
bit period (T): The amount of time required to transmit a logical one or a logical zero. [T1.106-1988]. These definitions were prepared by ATIS Committee ...
atis.org/tg2k/_**bit_period**.html - 2k - Cached - Similar pages

Definition: **bit period**
bit period (T): The amount of time required to transmit a logical one or a logical zero. [T1.106-1988]. This HTML version of Telecom Glossary 2K was last ...
www.its.bldrdoc.gov/projects/devglossary/_**bit_period**.html - 2k - Cached - Similar pages

Manchester code - Wikipedia, the free encyclopedia
Each **bit** is transmitted over a predefined time **period**. ... In the Thomas convention, this results in the first half of a **bit period** matching the true **bit** ...
en.wikipedia.org/wiki/Manchester_code - 27k - Cached - Similar pages

Life 17-**Bit Period**-2 Oscillators
Conway's Game of Life: 17-**bit period** 2 oscillator lists and glider syntheses.
home.interserv.com/~mniemiec/p2osc17.htm - 18k - Cached - Similar pages

Life Twenty-**Bit Period**-3 Oscillators
Conway's Game of Life: 20-**bit period** 3 oscillator and pseudo-oscillator lists and glider syntheses.
home.interserv.com/~mniemiec/p3osc20.htm - 17k - Cached - Similar pages
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[PDF] Compensation of polarisation-mode dispersion exceeding one **bit** ...
File Format: PDF/Adobe Acrobat
Conclusions: The compensation of PMD exceeding a **bit period**. using a tracking electro-optic polarisation controller and single Hi- ...
ieeexplore.ieee.org/iel5/2220/17020/00784549.pdf?arnumber=784549 - Similar pages

[PDF] than one half of the **bit period**, and the length averaged ...
File Format: PDF/Adobe Acrobat
than one half of the **bit period**, and the length averaged dispersion at the. end of the span must be near zero for all wavelengths. In this paper I will ...
www.springerlink.com/index/rv57lmk868235485.pdf - Similar pages

Method for **bit**-synchronous transmission of data - Patent 4142065
For the durations of the bits, after every quarter **bit period** and after every .... Moreover, the pulse amplitudes are zero after a half **bit period** and after ...
www.freepatentsonline.com/4142065.html - 26k - Cached - Similar pages

Bit synchronization circuit - Patent 4829544
a phase monitoring circuit for detecting, during each **bit period** associated with said digital signal, the advance or delay of the phase of said clock signal ...
www.freepatentsonline.com/4829544.html - 37k - Cached - Similar pages
[More results from www.freepatentsonline.com]

Spread spectrum **bit** boundary correlation search acquisition system ...